

REMARKS

In the Office Action dated September 19, 2008, the Examiner objected to the title of the invention in that the title should be indicative of the invention to which the claims are directed. Subject to the Examiner's approval, Applicant proposes that the title be changed to Screw Pump and Pumping Arrangement to which claims 1-7, 9 and 10-17, 19-21 respectively, are directed.

The Examiner also reminded the Applicant of the proper language and format for an abstract of the disclosure. Applicant has accordingly prepared an Abstract with proper language and form for which Applicant respectfully solicits the Examiner's approval.

In the paragraph numbered 4 of the Office Action, the Examiner objected to the specification as failing to provide antecedent basis for the claimed subject matter. Applicant has amended claims 8 and 18 to place the claims in proper format.

Claims 8 and 18 were also rejected by the Examiner under 35 USC § 112, first paragraph, as failing to comply with enabling requirement. The Examiner asserted that "It is not clear how the pressure at one of the inlets during pumping is higher than the pressure at another of the inlets." Applicant traverses this rejection and seeks favorable reconsideration in view of the following remarks.

As indicated in the specification, the prior art screw pumps suffered from limitations in its operation which rendered them incompatible, typically requiring each secondary pump to be backed by a respective pump.

"If a screw pump has a sufficiently high capacity, two turbomolecular pumps could be simultaneously backed by a single screw pump by connecting the exhausts of the turbomolecular pumps to the inlet of the screw pump via a common backing line. However, in such an arrangement, any variation in the flow rate of

pumped gas exhaust from one of the turbomolecular pumps could change the fluid pressure within the common backing line, which in turn would affect the performance of the other turbomolecular pump exhausting into the common backing line. In view of this, typically each secondary pump is backed by a respective pump.

It is an aim of at least the preferred embodiment of the present invention to provide an improved screw pump which can simultaneously back two pumps whilst substantially avoiding the aforementioned problem.” (pg 1 lines 19 to 31).

And, as clearly described in the specification, the two inlets can be at different pressures:

“By providing two inlets for the chamber, separate flow paths can be defined within the chamber, the flow paths being isolated from each other by the screw pump mechanism until the paths merge at, for example, the pump outlet. By isolating the fluid passing along one flow path from the fluid passing along the other, pressure differentials between the first and second flow paths can be substantially maintained, and so any fluctuation in the pumping rate of one pump connected to the screw pump does not significantly affect the performance of the other pump connected to the screw pump. Thus, a single screw pump can be provided for backing simultaneously two secondary pumps, reducing the cost and size of the footprint of a pumping arrangement for two process tools.” (pg 2 lines 6 to 15).

Applicant respectfully submits that the rejection of claims 8 and 18 as failing to comply with the enablement requirement should be withdrawn as ill-founded.

The Examiner also rejected claims 1-21 under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant traverses this rejection and seeks favorable reconsideration in view of the following remarks and amendment to claims 1 and 11.

Applicant respectfully submits that although the purportedly vague and indefinite language “adapted for” is cited as an example in MPEP § 2106IIC as vague and indefinite, Examiners must use the perspective of one of ordinary skill in the art so that claims are not examined in a vacuum. If elements of an invention are well known in the art, applicants should not have to provide a disclosure that describes these elements. Notwithstanding the foregoing, the specification of the present invention does disclose examples of such elements.

“The pump 10 further includes a first shaft 26 and, spaced therefrom and parallel thereto, a second shaft 28 having longitudinal axes substantially orthogonal to the top plate 14 and bottom plate 16. Bearings (not shown) are provided for supporting the shafts 26, 28. The shafts 26, 28 are adapted for rotation within the chamber 18 about the longitudinal axes in a contra-rotational direction. One of the shafts 26, 28 is connected to a drive motor (not shown), the shafts being coupled together by means of timing gears (not shown) so that in use the shafts 26, 28 rotate at the same speed but in opposite directions.” (pg 3 line 29 to pg 4 line 4).

In addition, if Applicant were to delete the objectionable claim language as implicitly suggested by the Examiner's rejection of the claims, the resulting claims will have a broader interpretation, when issued, than that which would be justified or intended.

However, in order to further advance prosecution of the application, and in view of the foregoing remarks, Applicant has amended claims 1 and 11 to delete “adapted to” and earnestly solicits the Examiner’s approval of replacing it with are “rotatably disposed” for counter-rotation within the chamber.

The Examiner rejected claim 1, and apparently claim 9, under 35 USC § 102(b) as identically disclosed by Frieden (Publication Number DE 19820622). The Examiner has also rejected claims 1 and 9 under 35 USC § 102(b) as identically disclosed by Klaey (Publication Number GB 2,030,227). Applicant traverses these rejections and seeks favorable reconsideration in view of the following remarks and clarifying amendments to the claims.

Applicant notes that the cited prior art devices disclose inlets that are located at non-common low pressure sides of the chamber (i.e. at opposite ends of the screw), whereas the present invention discloses inlets to the screw pump that are located at a common low pressure side of the chamber thereby enabling separate pumping of gases from two process chambers. Although claim 2 had included the limitation that “the inlets are located ... at a common low pressure side of the chamber,” in order to distinguish over the cited art in rejecting claims 1 and 9, Applicant has amended claim 1 to include the limitation that “a first one and a second one of the respective inlets are located at a common low pressure side of the chamber.” Rejected claim 9 which depends indirectly from claim 1 has been amended to conform with claim 1.

Accordingly, Applicant submits that independent claim 1 and dependent claim 9, as amended, are not anticipated by the cited references, Frieden or Klaey, alone or in combination.

The Examiner rejected claims 2-7 under 35 USC § 103(a) as being obvious over Klaey in view of Behrends et al. (US 3,420,180). Applicant traverses this rejection in view of the following remarks.

Each of claims 2-7 depend directly from amended claim 1 and are not rendered obvious in view of the above discussion of Klaey, and the present amendments to independent claim 1.

In addition, neither Behrends alone, nor in combination with either Klaey or Frieden as discussed further render obvious rejected claims 2-7. The present invention, as claimed in rejected dependent claims 2-7 are directed to twin inlets to a single screw set. None of the cited patent publications disclose nor render obvious the use of two inlets to a single screw set. At best, the cited art can be said to have twin inlets, but to separate screw sets, i.e. double ended screw pumps. Applicant respectfully submits that for this additional reason dependent claims 2-7 are not rendered obvious by Klaey in view of Behrends.

Lastly, Applicant has amended claims 3-7, 12-17 and 19-21 to conform with the antecedent basis to the amendments made to the limitations in claims 1 and 11. No new matter has been introduced.

Applicant respectfully submits that:

the objection to the title of the invention and the objection to the abstract has been overcome by the proposed amendments;

the objection to the specification as failing to provide proper antecedent basis for the subject matter claimed in claims 8 and 18 has been overcome by the amendments to these claims;

the rejection of claims 8 and 18 for lacking enablement should be withdrawn in view of the description found in the specification of the objectionable language;

the rejections of claims 1 and 9 as anticipated has been overcome by the amendments to such claims; and

the rejection of claims 2-7 as obvious has also been overcome in view of Applicant's remarks and the amendment to independent claim 1 from which rejected claims 2-7 depend.

In conclusion, Applicant submits that the application is in condition for allowance and requests that it be promptly passed to issue.

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